

ABSTRACT OF THE DISCLOSURE

A method for deriving coefficients for a time domain equalizer function (24) as implemented by a digital signal processor (35) in a DSL modem (20) is disclosed. A transmitting modem (10), such as at a central office, issues a pseudo-random training sequence that is received by the receiving modem (20). Correlation matrices are derived by the digital signal processor (35), from which sets of eigenvalues and eigenvectors are derived. A flatness constraint on the frequency response of the time domain equalizer is established, and included with a flatness scaling factor (λ) into a minimization cost function. One or more values of the flatness scaling factor (λ), preferably between minimum and maximum eigenvalues, are evaluated in the cost function, to derive the optimum filter for the time-domain equalizer. The flatness constraint ensures that the time-domain equalizer is not subject to near null conditions and large variations in its frequency response.